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October 13, 2019

VIA ELECTRONIC DELIVERY
Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street, SW
Room TWA325
Washington, DC 20554

Re: *Ex Parte* Statement on WT Docket No. 16-239, RM-11831 and RM-11828

Dear Ms. Dortch:

Marcus Spectrum Solutions, LLC (MSS) is filing this statement to address important spectrum policy issues in the above listed proceedings.

Marcus Spectrum Solutions LLC (MSS) is the consulting practice of Michael J. Marcus, Sc.D., F-IEEE, a retired FCC senior executive who worked at the Commission nearly 25 years in both the spectrum policy and enforcement areas. His qualifications are well know to the Commission[1]. He was awarded the 2013 IEEE Communications Society Award for Award for Public Service in the Field of Telecommunications.[2] He holds amateur radio station license N3JMM. These comments do not necessarily represent the view of any MSS client and are being submitted purely in the public interest and without any remuneration.

Like many other Title III technical rules, the Part 97 Amateur Radio Service rules contain anachronistic provisions that made sense when they were adopted decades ago but are ambiguous or problematical today as a result of rapid technological change which was not and in most cases could not be anticipated when the rules were drafted. The combination of historically decreasing technical policy resources at FCC[3] as well as the low priority given to Part 97 issues compared to, say, 5G issues, makes such anachronisms especially inevitable in Part 97 regulations. These anachronisms underly much of the misunderstandings of various parties who have participated in these proceedings. MSS urges the Commission either to update the provisiosn described below or at least issue interpretations in the context of current technology.

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[1] FCC Press Release "FCC Engineer Michael J. Marcus Honored by Institute of Electrical and Electronics Engineers (IEEE)" February 3, 2004, (http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-243463A1.pdf)

[2] http://www.comsoc.org/about/memberprograms/comsoc-awards/telecom/bios

[3] For example, the Commission's Office of Engineering and Technology is now half the size of its predecessor when the author entered employment at FCC in 1979.

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§97.113(a)(4) : No amateur station shall transmit … messages encoded for the purpose of obscuring their meaning, except as otherwise provided herein;

This long term rules is related to another provision of the ITU Radio Regulations which are a treaty obligation of the US. I assume that its wording has not changed in decades. It is clear that when this wording was drafted it referred to using clear "alphabets" for sending text messages such as the International Morse Code or the ITU Baudot alphabet for teletypewriters.[4] Neither of these contained any provision for error correction in the case of noisy radio channels. With advances in information theory and low cost semiconductor implementation of complex functions it is possible build efficient communications with highly complexmsignal design. This brings us to the meaning of the phrase "for the purpose of obscuring their meaning". Does this mean that a cryptographic-like function that includes **any** other functionality such as error control is allowed? Is any marginal improvement of communications efficiency permitted regardless of its effective ability to obscure the tesxt fo the transmission to those who do not have special equipment to decode such transmissions? The Commission must clarify this issue.

§97.113(a)(5) : No amateur station shall transmit … Communications, on a regular basis, which could reasonably be furnished alternatively through other radio services.

Presumably when this was adopted "other radio services" were radio telephone or radio telegraph. For long distance communications, HF was the only option. However, Mobile Satellite Systems ("MSS") such as INMARSAT and Iridium have been available since 1976 and 1998 respectively. These worldwide MSS communications were initially very expensive and were not cross elastic with amateur radio-based alternatives. However, the service offerings of OCENS, Inc.[5], Garmin inReach[6], or SPOT GEN3® Satellite GPS Messenger[7] **now** are comparable to the fixed and variable costs of using the amateur packet radio services involved in these proceedings and provide a service that is basically fungible. However, the Commission has never provided any guidance on how §97.113(a)(5) should be interpreted in such cases. In particular, how should the word "reasonably" be interpreted here. We urge the Commission to either update this rule or clarify its meaning.

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[4] Note the text of §97.309 as a clue to the historic meaning of §97.113(a)(4): §97.113(a)(1),(3) enumerate in turn:

- International Telegraph Alphabet No. 2, code defined in ITU-T Recommendation F.1, Division C
- The 7-unit code specified in ITU-R Recommendations M.476-5 and M.625-3
- The 7-unit, International Alphabet No. 5, code defined in IT--T Recommendation T.50

[5] https://www.ocens.com/Software-and-Services.aspx

[6] https://satphoneshop.com/downloads/garmin-in-reach-plans-flyer-sept-web.pdf

[7] https://www.findmespot.com/en/index.php?cid=100

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§97.309(a)(4) Where authorized by §§97.305(c) and 97.307(f) of the part, an amateur station may transmit a RTTY or data emission using the following specified digital codes: … An amateur station transmitting a RTTY or data emission using a digital code specified in this paragraph may use any technique whose technical characteristics have been documented publicly, such as CLOVER, G-TOR, or PacTOR, for the purpose of facilitating communications.

The parenthetical mention of "PacTOR" here is ambiguous and implies to many in the Part 97 community that the developers of PACTOR have delegated authority from FCC to update the technology and maintain FCC's approval for the modifications. The root cause here is that the required "incorporation by reference procedures of 1 C.F.R. §51.9 were not followed when this was codified. We urge the Commission to remove this ambiguity by either rewriting this section or follow the proper procedure for incorporation by reference.

Conclusion

We have described above three problems with the current FCC rules and policies dealing with packet radio use on amateur bands. We urge the Commission to clarify these long standing issues with either rule changes or policy statements.

Sincerely,

/s/

Michael J. Marcus, Sc.D., F-IEEE
Director